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Performance Based Contracts

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ABSTRACT: The 90s saw a noticeable growth in the use of competitive tendering as a way of selecting bus operators to deliver a range of services that had previously been supplied by governments, mainly driven by pressures to reduce the budget cost impact of service provision. The focus was typically on minimising costs to government (under the label of cost efficiency), rather than on delivering specific service quality outcomes. Negotiated performance-based contracts (PBCs) have emerged in recent years as an alternative to competitive tendering (CT) in its various guises (including tendered PBCs) as a framework within which the broader economics and social outcomes have moved to centre stage under the labels of value for money and maximising the benefits of government subsidy to society as a whole. This paper, a report from the 8th International Conference on Competition and Ownership of Land Passenger Transport held in Rio de Janeiro in September 2003, details the relative merits of negotiated and tendered PBCs, highlighting the context within which each type of PBC is best positioned to service the broader goals of public transport policy.

KEY WORDS: Performance based contracts, competitive tendering subsidy, contracts, bus sector.

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1. Introduction

“Performance Based Contracts, or any contract for that matter, will not work successfully without a trusting quality relationship between government, regulator and operators” (Hensher in workshop report to plenary session, September 17, 2003)

The last 20 years have witnessed many applications of a diverse array of regulatory and institutional reforms designed to deliver improved public transport services. Using a wide range of explicit or implicit objectives (eg reducing government subsidy, providing value for money, ensuring cost efficient service delivery.....), a great deal of experiential evidence on the relative merits of reform models that promote elements of competition in land passenger transport (especially bus and rail) has been accumulated.

Central to the many market applications has been a “contract” (or right to provide services) of some form, ranging from a loose registration in an economically deregulated setting (with new roles for the regulator), through competitive regulation (especially through tendering and franchising for a defined period).

One of the most discussed issues of the reform process has been the search for evidence on how successful previous initiatives relating to ownership and contracting of the public transport planning, development and service delivery functions have been and whether refinements might provide better outcomes. Competitive tendering (CT) has shown itself to be a relatively popular instrument for change. However, as time passes, a number of deficiencies in the CT processes implemented to date have emerged, raising questions about where this approach is most suitable and the ways in which it is best applied. Some of these deficiencies are attributable to the inadequacy of the regulatory framework within which CT is delivered and monitored (although the amount of monitoring is usually disappointingly limited) and some are due to the nature of CT. Relevant examples of these deficiencies include the following:

- a) while we can cite some substantial gains in cost reduction from CT, these often show themselves as once-off gains in the initial round of tendering. There is also evidence of significant savings from corporatisation of previous public monopolies (eg Toronto, Dublin and Sydney and Melbourne (as documented in Stanley and Hensher (2003)), suggesting that CT may be a sufficient but perhaps not a necessary condition for delivering such savings although the evidence would tend to support the view that larger and earlier savings generally result from CT and other forms of direct competition.
- b) a supplementary role of CT is to serve as an instrument for radical change in service delivery (for example the replacement in Santiago Chile of 4000 bus operators (with 8000 buses) with 15 operators). Subsequent re-tendering delivers very little gain in a financial sense¹ and indeed in situations where a large

¹ What we see in particular is that the competitive tendering of a large public sector provider delivers an immediate cost saving *but it is a once-only gain, with corporatisation sometimes delivering similar outcomes (eg Stanley and Hensher 2003).*“ If costs of having a private firm supply the services could be reduced by means of a negotiated contract, the considerable costs of organizing a competitive bidding would be averted. Indeed ...a competitive tendering scheme might in some cases be *inferior* to methods of contract renewal or negotiation” (Berechman, 1994, 298-99).

number of small operators in the informal (or alternative) transport sector as in Brazil are replaced by a few larger operators, the costs of service delivery under CT may increase². Although there is an element of this in South Africa, Walters et al. (2003) argue that the main reason for the cost uplift was improved vehicle specifications that brought the average age of the conventional bus fleet down from 12 to 6 years. The tendency for numbers of bidders for re-tenders to decrease in some countries suggests that this issue of the sustainability of initial cost savings may become widespread;

- c) the accumulating uncertainty of the re-tendering process often restricts investment and innovation, with operators typically limited to complying with the minimum requirements³. Preston suggests that this will be mitigated by the emergence of global players eg Arriva, Connex; whereas Stanley and Hensher argue that these players practice market sharing which is anti-competitive.

Such issues are leading to an examination of negotiated (performance-based) contracts as an alternative (and/or sequenced complement)⁴ to CT as a means of allocating rights to deliver public transport services. Negotiated contracts are common in public-private partnerships in the infrastructure area but are much less so in public transport operation.

An overriding issue eloquently stated by Preston (2003) that guided our discussions is that contracts (in general) should strive to comply with the following position:

'Too little change results in system ossification, too much change results in transitional costs (including transactional and coordination costs) that will outweigh any benefits of change'.

The workshop started from the position that all rights to provide public transport service (expressed through contracts) should be dependent on the performance of the provider and that this should be expressed through a performance-based contract, in the broad sense. Discussion centred on the nature of performance-based contracts and the issues that need to be dealt with in developing contracts that most effectively meet a government's objectives in public transport service provision⁵. In particular, discussion focused on the relative merits of negotiated contracts, compared to competitively tendered contracts, in delivering value for money outcomes. As one part of this, the workshop sought to

² Some commentators have suggested that this is an example of over zealous regulators more interested in control (and administrative coherence) than in preserving the benefits of a rich and varied flexible public transport system (often beyond their effective control). This is the price of eliminating a high level of customer service, albeit one out of the control of the regulator.

³ If there was a perfect or near-perfect market for factor inputs (especially capital and labour) then an incumbent should not be concerned since they could sell their assets for their full economic (market) value and be no worse off than if they had successfully re-won the right to deliver services. This is not often the situation however; and indeed the perceptions are such that asset re-investment has become a major concern without substantial guarantees from government or suppliers. Interestingly in Brazil, many operators of urban bus services acquire buses at very attractive prices from the manufacturers and amortise them over 3 years and then on-sell to other markets (in particular poorer border countries). The maintenance warranty over a 3 year economic life is such that the buses often need little attention and so we see private operators being no more than capital investors. Any incentives to focus on the demand side are conspicuously absent (although with over 60% of market share in favour of bus and rail in metropolitan Brazil, this may be a lesser concern. However car ownership is steadily rising with a high market share of 80% in Brasilia to 50% elsewhere).

⁴ In South Africa CTs are a way to attract new entrants into the market, then based on performance, an extension is negotiated. To attract new entrants, they stipulate a minimum percentage of subcontracting, so that after one year of subcontracting, the subcontractor can become a "set aside" and can operate in their own right as a fully fledged operator.

⁵ Preston et al. (2003) illustrate the tensions between commercial and social objectives in bus operations which they believe can only be overcome by quality contracts

establish a framework within which both competitively tendered and negotiated contracts can be represented as a class of contract within the general model of performance based contracts (PBCs), recognising that both classes of contract can and do exist without any performance-linked specifications.

2. Definitional Issues for Performance Based Contracts (PBCs)

An effective contractual regime is one within which the government (S: strategic), the regulator (T: tactical), the operator (O)⁶, and society at large can participate as **trusting partners** in securing value for money in (i) the allocation of a total subsidy budget to the provision of services or (ii) in the delivery of non-subsidised services⁷. Within such a contractual regime an operator provides services (be it designed at the **T level** or integrated at the **O level**) at *best practice cost levels* (however determined) for a given level of service delivery either:

- (i) in return for direct financial (social) support from government (ie a social subsidy which may be awarded by either CT or negotiation), or
- (ii) in return for permission to operate a negotiated/agreed level of service (without subsidy but, for example, subject to a cost-plus fare determination).

Within such a contractual regime, Performance Based Contracts are characterised by a payment structure involving:

- (i) a fixed payment (eg a community service obligation (\$CSO) payment linked to a minimum service level (MSL) program determined by negotiation or CT, or a partnered service design and level,) and/or
- (ii) a set of incentive payments above the fixed payment linked to patronage and/or service levels (eg vehicle kilometres, frequency by time of day....).

A further characteristic of PBCs is that the incentive payments linked to patronage and service growth reflect both benefits derived from all sources (ie consumer or user surplus) and additional benefits

⁶ A setting that has proven to be especially useful within which to position the obligations of organizations and stakeholders is the *STO* framework. *It recognizes that* policy, planning and operations exist within a hierarchy of objectives functionally split into three *interdependent* layers - Strategic, Tactical and Operational. This organisational framework offers an attractive setting within which to evaluate mechanisms consistent with a holistic (or system-wide) perspective on service delivery. The main features of the framework are represented by three *STO* levels:

- The *Strategic level* where the focus is on the establishment of broad goals and objectives and guidance on ways of achieving outcomes consistent with such goals ('what do you want to achieve')
- The *Tactical level* which highlights the supporting mechanisms (eg the regulatory process) to achieve the strategic goals. There is a strong emphasis on fare and service planning. In many countries we do not have an explicit public transport regulator and so tactical functions are the responsibility of authorities and/or operators (eg Van de Velde and Pruijboom 2003)
- The *Operational level* which focuses on delivering the desired services to the market consistent with the strategic intent and aided by tactical mechanisms.

Van de Velde and Pruijboom (2003) illustrate how giving tenderers tactical responsibilities will lead to service uplifts.

⁷ Although PBCs in developed economies tend to be integrated into a system of subsidy support, this need not be the case in all situations. For example, in Brazil, PBCs are being considered in a context where the operators in the formal (ie 'legal') sector would be required to comply with benchmark best practice on costs (without any subsidy support under CSO payments), with fares determined by a cost-plus formula and patronage incentive payments available for patronage growth above an agreed baseline. In Santiago (Chile) an innovative internal cross-subsidy scheme between feeder service operators via a centrally tendered fare collector (using smart cards) is designed to use (feeder) system wide fare revenue to eliminate all public subsidy.

specific to reducing car use (or more broadly reducing negative environmental impacts). Those linked to service levels may also incorporate a mechanism for supporting new entrants into developing markets (as in South Africa, for example under the empowerment policy). Patronage incentive payments (PIPs) may be based on various criteria (eg passenger boarding and passenger kilometres to account for the trip length distribution as well as the actual number of passengers)..

Figure 1 shows the contractual components that bind the STO entities together⁸. Although the maximum fare is on the *laissez-faire* side of regulatory processes, while *social support* presents many contract specification challenges to effectively promote goals consistent with strategic objectives, all contract components can apply to all contract types.

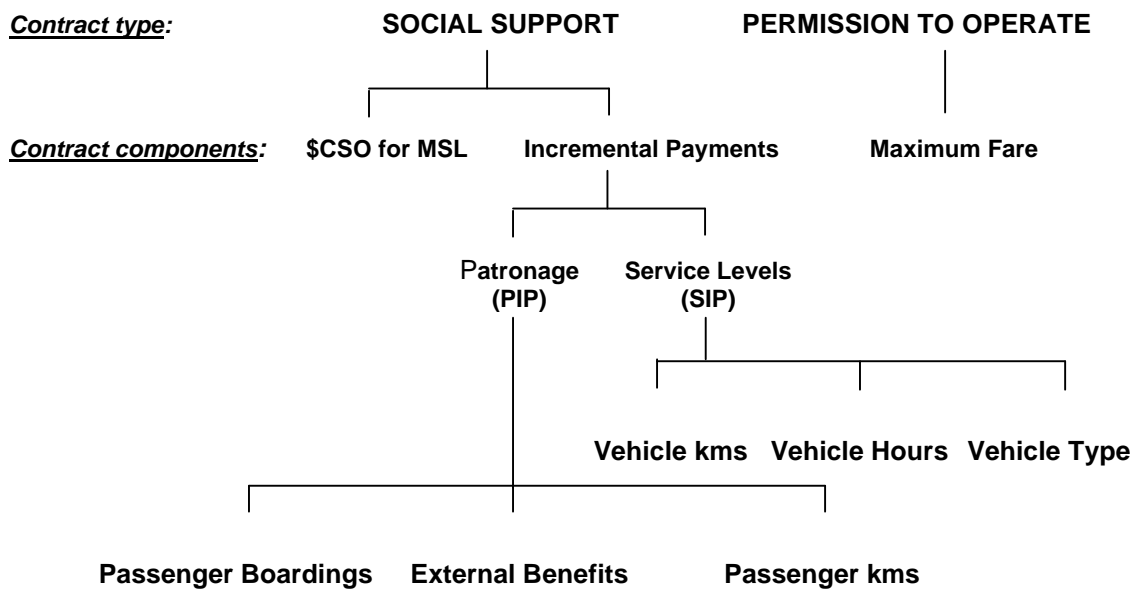


Figure 1: Contract Components

In discussing the roles of competitive tendering and negotiation in the specification of a PBC regime, it is useful to distinguish between the basis for procuring the operator and the basis for paying/rewarding the selected operator. A number of combinations of procurement and payment strategies can be devised from this simple dichotomy, as summarised in Figure 2. Most commonly, the payment model (and all other contract conditions) would be defined in advance by government; and then the operator selected through CT or a negotiation process. However, CT and negotiated contracts can be complementary in a temporal sequence. For example, one can use a service incentive payment (SIP) under a negotiated contract to assist new entrants into new markets (including a base \$CSO) perhaps with training/skill enhancement support⁹. When a market is established (given sufficient elapsed time – eg 5-10 years) one might introduce a PBC via CT to rationalise the number of ‘competing’ operators in a corridor (as is proposed for Santiago, Chile – see Appendix A) or select an individual operator at

⁸ Introducing "contract components" (MSL, IP, etc), "contract form" (how these are combined and measured), and "contract process" (how components and payment rates are determined - CT, negotiation) was found helpful.

⁹ The issue of skill enhancement in preparation for participating CT or negotiated contracts evolved in the workshop as a real concern in many developing economies (examples offered from South Africa, Chile and Brazil).

a route or corridor or area level; or, one might move to a PBC regime via a negotiated contract system. Alternatively, a government might use CT to short-list a number of suppliers with whom it then negotiates to select the preferred supplier.

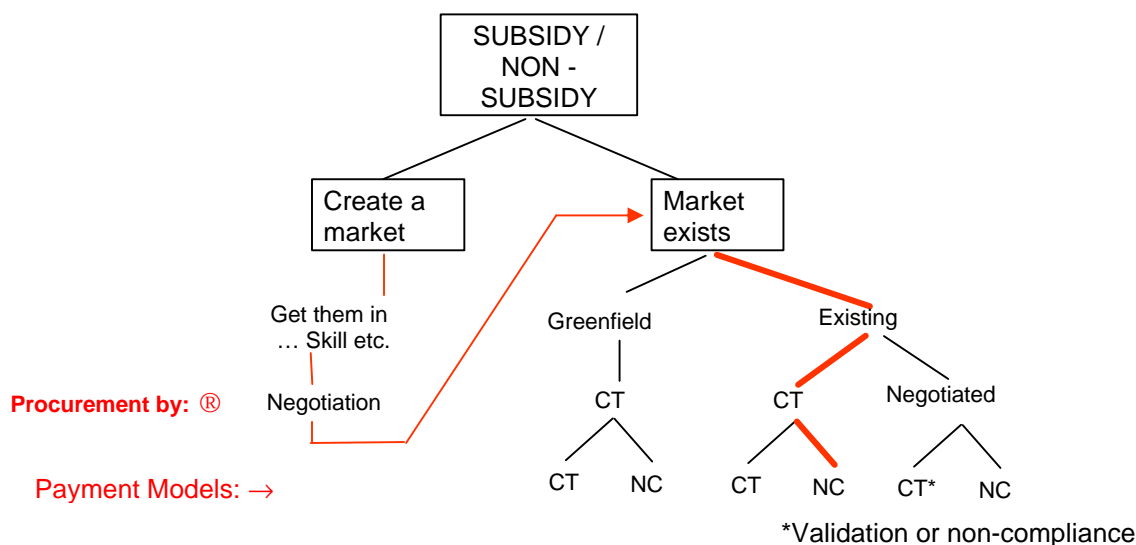


Figure 2. Processes for Procurement and Payment Rates Determination¹⁰

Note: (i) A Greenfield site is different to ‘creating a market’. The latter is more global in its national context and refers to a general absence of expertise that can readily participate in the market, be it an area already serviced or a new development with no services (ie a Greenfield site). (ii) The block under Greenfield, could also be negotiated. For example, in South Africa (eg Durban) an expression of interest for new services is common which is not subject to CT.

Incentive payments can be introduced through CT or negotiation under a PBC regime. For example, one can establish a patronage incentive payment (PIP) of various possible types; eg:

- (i) the Adelaide Model (agreed non-competitive sum per additional passenger) and
- (ii) the Hensher-Houghton Model: with a fixed or variable PIP budget competed for amongst a predefined set of operating areas, which we may refer to as competition at the later service delivery stage, as distinct from at the tendering stage.

¹⁰ We also have a third possible process - competition at the service delivery stage, applied to determine PI payment rates when the budget is fixed, as noted in the text and promoted in Hensher and Houghton (2003). Competition for PIP's therefore, can be an optional complement to both CT and NC. The distinction between CT and NC is blurred to the extent that NC's may be used to determine PIP's in a contract where \$CSO is determined through CT, to form a mixed contract. Further, as noted in the text, competition at the service delivery stage may be used to determine PIP's when a \$CSO is determined by either CT or NC.

Given that many factors affecting patronage are outside the influence of the operator, the appropriate level of PIP may be fairly modest; and this will then need to be supplemented by a service incentive payment (SIP) to provide the operator with sufficient incentive to expand services: the Adelaide model adopts this approach, and requires a tactical-level sign-off on service proposals. This SIP may be a marginal payment rate (as in Adelaide) or an amount competed for by operators who grow service from an agreed MSL linked to a base payment. The introduction of a service incentive payment, where one does not compete for subsidy budget between operators in different spatial settings, is an appealing model for South Africa and also Brazil (the Brazilian model is shown on right hand side of Figure 2 by the thicker line only).

The workshop argued that a well defined governance structure is required for PBCs to work best (a position also suggested by Preston (2003)). To be specific, in some countries there is a significant element of influence or even corruption manifested in various forms. For example, in Brazil we see the powerful influence of private bus operators (in the legal sector, in theory) who have been very successful in negotiations associated with cost-plus contracts (used in fare setting) in securing higher fares than are consistent with cost-efficient service delivery. The weakness of the regulator in establishing and implementing, through regulation, benchmark best practice costing, demonstrates the influence of information asymmetry as well as the power of private operators, as a group, over the regulator (the latter being a relatively low paid public servant with limited resources).

3. Procuring Services through Competitively Tendered or Negotiated Contracts - The Issues

Within the generic PBC framework, a central theme of the workshop was the extent to which competitive tendering (CT) has served its role well but that there may be a growing role for negotiated contracts (NCs) in circumstances where

- (i) the financial gains from re-tendering are small;
- (ii) the incumbents are efficient suppliers; and,
- (iii) a greater focus should be placed on innovation in service supply, growing patronage and providing some longer term incentives for operators to invest in quality assets (especially in situations where there is an inefficient market for second-hand assets that adds substantial risk to retrieving the residual value of buses and coaches in the event of not having one's contract renewed).

There was broad agreement that CT and NC may have complementary roles. It is quite compatible for a given contract to determine the \$CSO for an MSL through CT while determining a patronage growth incentive payment rate through a negotiation process (or by specification by the regulatory authority). The key requirement is that contracts have transparency and simplicity. This may be helpful in some cases where a legal requirement for CT may be satisfied by \$CSO determination, leaving a level of negotiated contract or competition at the service delivery stage to determine payments for service/patronage improvements.

Negotiated contracts should be subject to benchmarked best-practice context-specific costs (that arguably approximate the CT outcome), with incentive payments for achieving specified growth in patronage and/or service levels. As noted above, these incentive payments could come from a pool of funds that is competed for¹¹ across operators within a contract set (eg a metropolitan area), as proposed by Hensher and Houghton (2003) and Hensher and Stanley (2003), for growth above a predetermined minimum service and patronage level. The workshop discussed the major upsides and downsides of CT and NC relative to each other. This was the most ‘heated’ phase of the workshop, as participants sought to establish a position and clarity of argument in support of either CT or negotiations as a means of selecting the operator.

The following summarises the main features and merits of the CT and NC procurement approaches against a set of key contracting attributes:

Cost and Subsidy Impacts

- ▶ CT has been successful in delivering substantial and sustained cost reductions (up to 30% - 40%), but generally this relates to the first round of tendering of a public monopoly service (similar results have been obtained in other sectors in such situations).
- ▶ There is evidence that corporatisation together with budget constraints and the threat of competition, may also deliver substantial savings – although these would tend to happen more slowly and perhaps to a lesser degree than with CT.
- ▶ Evidence is accumulating of cases where some of the initial cost savings through CT are eroded through cost escalation in subsequent tendering rounds. Such cost escalation may reflect a variety of factors, eg labour market trends, enhanced vehicle and service specifications, reduced competition, reaction to excessively low initial bids (‘winners curse’).
- ▶ While the evidence is sparse, there is little to indicate that negotiated contracts are likely to result in lower (or higher) subsidies than CT contracts.

Administration and Regulatory Costs

- ▶ CT involves significant administration costs to both operators and government/regulators. In addition, the transition costs to operators and to users (through service changes, uncertainties etc) may be considerable.
- ▶ However, NC may also involve significant transactional and coordination costs, particularly in establishing appropriate benchmarks and monitoring performance against these.
- ▶ CT may degenerate into an auction in the labour market, possibly leading to excessive wage reductions and the need for minimum wage level regulation.

¹¹ Some operators prefer to have a government determined sum of money available that is not dependent on the success or otherwise of all operators in growing patronage. This is the preferred model promoted by the private operators in Sydney. This model essentially recognises that the competition is between public transport and other modes, especially the car. The challenge is for government to establish a suitable budget to ensure delivery of patronage payments. The Adelaide experience has shown what can happen if the operator is too successful – the money runs out but the government has a contractual obligation and hence is looking for ways of reducing total payments to operators. Future contracts should learn from this open-ended approach.

Establishment of Appropriate Benchmarks

- ▶ CT establishes benchmark subsidy etc rates through the competitive process.
- ▶ Under NC, ‘benchmarking’ and ‘yardstick competition’ approaches are used to approximate the results of the CT process. However such approaches are imperfect (particularly in ‘green field’ situations) and may involve complex calibrations and extensive negotiation processes. As each bus network and area is different, fair treatment across all operators may be difficult to achieve.
- ▶ If comparisons among firms (ie yardstick competition) becomes systematic, and operators under NC do not change, collusion around performance benchmarks may arise.
- ▶ CT is a necessary ‘fall-back’ option for government in the event that the negotiation process cannot be concluded satisfactorily.

Accountability and Transparency

- ▶ NC involves a less transparent process with greater danger of regulator capture.
- ▶ However, CT is not free from such dangers, as illustrated by recent experiences with the Melbourne train and tram franchises.
- ▶ Under CT, the incumbent operator accumulates extensive market knowledge, much of which is not made available to the regulator. This may give the incumbent operator a substantial advantage in re-tendering.

Optimising Networks and Funding Allocation

- ▶ Networks subject to CT may be designed to maximise social surplus subject to a budget constraint, provided all the network is tendered at the same time; otherwise SS maximisation is problematic.
- ▶ Within a NC process (and possibly CT), it is possible to arrange competition between operators for a fixed incentive payments budget (for patronage and/or service incentives), over all levels of demand and service or above a pre-determined minimum level (as per the Hensher-Houghton (2003) framework).
- ▶ This should ensure that competitive forces are at work throughout the life of a PBC, provided that the incentive scheme is an effective mechanism to deliver service improvements and active monitoring takes place.
- ▶ Experience under either CT or NC, suggests that regulators typically err on the side of caution and tend to let contracts based on previous services. However, with appropriate service review procedures during the contract term, subsequent changes may be initiated between the two parties – although arguably this is more difficult under the CT than the NC model.

Some Development, Performance Incentives and Monitoring

- ▶ Key performance indicators (KPI) and appropriate benchmarks are an important feature of negotiated contracts, since they form the basis for negotiation of contract renewal. The regulator must have a good knowledge of best practices, and cannot

be dependent on advice from operators (note the situation in Brazil where fare adjustments have been based on cost escalation advice from the operators).

- ▶ Under both NC and CT, incentives may need to be large to influence operator behaviour. This may be a particular problem when available funds are constrained and have to be shared between multiple operators.
- ▶ There are weaknesses in approximating non-linear welfare functions with linear incentive functions. This could lead to over-shooting the welfare optimal level of service provision; although in practice such problems are likely to be limited by the various constraints in the system.
- ▶ Inadequate contract design (under either CT or NC) can result in perverse incentives, depending on the basis of reward, eg. through encouraging empty buses, split routes, longer trips.
- ▶ There is a danger of setting targets too low (eg. in cases where external factors prove favourable), and hence operators becoming complacent.
- ▶ Under NC, there is a danger that management effort will unduly focus on justifying their performance in order to secure contract renewal, rather than on genuine performance improvement.

Government Funding Risks

- ▶ Incentive-based contracts (whether CT or NC) may involve significant budget uncertainty for government, associated with service-related or patronage-related incentive payments. However, the extent (if any) of this problem depends on the details of contract specifications. (For example, under the Adelaide bus contracts, incremental patronage payments approximate to incremental fares income, leaving minimal patronage risk to government, while government has the veto on any proposed service changes.)
- ▶ The Hensher-Houghton payment model (which could be applied under CT or NC) can operate within a budget cap, being designed to encourage competition between operators for available subsidy so as to maximise social surplus per \$ subsidy.

Encouragement of a Strong, Diverse Supplier Market

- ▶ CT is likely to lead to periodic new entrants to the local market, and hence encourage innovative approaches etc; while NC may tend to result in ossification of the supplier market.
- ▶ With suitable contract design, CT may be used to encourage the development of smaller and new operators, as well as provide roles for larger established and entrepreneurial operators (maybe from overseas).
- ▶ Under CT, there is some danger of excessive consolidation of the supplier market among a few large operators (with risks of excessive market power and possible collusion). However, this danger can be minimised by imposing market share (or equivalent) limits on any one operator in an area.

- ▶ CT may give excessive advantages to incumbents in the tendering process (eg. through superior information, ownership of valuable depot sites etc), thus discouraging a strong supplier market. Such advantages can be reduced through appropriate contract specification.
- ▶ CT may be iniquitous under an empowerment regime such as in South Africa. Here it is desired to attract new entrants, to develop a market of reliable operators, while limiting the number through tendering (which will almost certainly discourage the smaller less advantaged operator), and at the same time giving them a limited and uncertain future in a volatile market. The transaction costs will be too high for too many operators. NCs may be even more iniquitous if they reinforce incumbency advantages; however benchmarking of costs is designed to prevent this.

4. Payment Models

One of the key features of any contract, whether procured through a CT or NC process, is the basis of payment to the operator. This payment basis will govern how the operator will behave over the life of the contract (eg. so as to minimise costs, maximise patronage etc). Potential types of payment models include (see Wallis 2003):

- (i) Gross Cost contracts as in Melbourne, London, many EU countries and others world-wide.
- (ii) Net Cost contracts (also known as bottom line or minimum subsidy) as in NZ, UK outside London, some in Australia, and in South Africa.
- (iii) Gross Cost plus patronage incentive contracts, which includes a fixed payment related to a minimum level of service plus patronage incentive payments (proposed in the Hensher-Houghton (2003) model with elements in Hordaland Norway model as presented by Larson (2001) and updated in Berge et al (2003)). One important sub-category of these is sometimes referred to as ‘economic-based contracts’, under which PIPs are related to the benefits of additional patronage, with 2 benefit components: a user benefit (or consumer surplus linked payout) per passenger and an externality benefit per ex-car passenger payout for above-base patronage (ie patronage levels associated with minimum service levels).
- (iv) ‘Commercial fare’ contract which is regulator-approved based on the average cost per passenger and is often linked to minimum service level obligations (eg Sydney private bus), and
- (v) Gross Cost plus patronage and service incentive payment contracts, which includes a fixed payment based on previous service levels before tendering and variations after, with service levels approved by regulator (eg Adelaide, Perth).

In addition, we note the payment model adopted for funding from central to regional governments under the New Zealand Patronage Funding scheme (Wallis 2003). This essentially is of the ‘gross cost plus economic-based patronage incentive’ type, with the level of funding to each region depending on the numbers of peak and off-peak passengers carried (based on user benefit and externality benefit rates). This scheme, introduced some 3 years ago, has had considerable success in encouraging the

development of services so as to increase patronage. Its success in this way has led to budgetary concerns and it is currently under review.

The payment rates associated with the form of contract establish the service delivery cost to government of achieving the strategic goals, which are usually expressed as dollar benefits to passengers and to other road users. Benefit rates can then be compared to the shadow prices of government funds. As discussed in the previous section, payment rates may be determined by two major processes: competitive tendering or negotiation.

The workshop discussions identified a number of payment-related issues that require careful consideration. These are synthesised below:

1. The appropriate **level and structure of maximum financial incentive rates** has to be established, based on the economic benefits of attracting additional passengers. As noted earlier, these benefits comprise economies of scale ('Mohring effect') benefits from increased public transport services plus net benefits (environmental and safety) relating to mode switching, particularly from car use. The maximum warranted financial incentive rates are related to this benefit function, allowing for the shadow price of public funds. A number of studies have estimated incentive rates on this basis, including the New Zealand Patronage Funding scheme (Wallis and Gale 2001).
2. Procedures are needed to **set actual payment rates to operators**, within the constraints of the above maximum levels but recognising that actual payments should be no greater than the amount required by an efficient operator to attract the additional patronage. One indicative approach to estimating the efficient incremental payment rate would be to base it on the operator costs of increasing service frequencies and the expected frequency elasticities, to derive the typical marginal cost per incremental passenger in a range of situations (peak, off-peak etc). These rates could be offered by government to the chosen operator. Alternatively, as part of the tendering process, operators could be asked to bid rates per incremental passenger (eg. for up to 2% increase, 2% - 4% increase etc); and these would then be compared with the maximum warranted payment rates.
3. Limited systematic evidence exists on the likely impacts of different payment rates on operator behaviour, and hence on their **effectiveness in generating additional patronage**: this would clearly be helpful in assessing how effective any rate proposals are likely to be in securing enhancements in services and hence increases in patronage. The operator response will depend on its marginal cost function for different service enhancements in a range of circumstances (eg. by time of day) and on the market response to such enhancements. The development of a better database of empirical evidence in this regard would clearly be helpful.
4. A growing number of PBCs are defined in a *multiple component form*, incorporating a baseline (or minimum) level of service financed by a fixed payment, and above-baseline levels of service and patronage (marginal activity) funded by various incentive payments schemes. While this two tier approach

provides some form of security to the operator (which is greater as the fixed payment becomes a higher expected percentage of funding sources), there might be a case for a single tiered approach in which all service and patronage levels are funded by incentive payments. This is worth investigation since it might help to establish the merits of multiple tiered approaches. The first tier of a two tiered approach, which is often referred to as the Minimum Service Level (MSL) tier, raises many questions of definition and complexity. In a trusted partnership (T-O) under PBC it is important to negotiate upfront a desired minimum service profile (coverage, frequency, fares, other service quality attributes – ie an agreed performance assessment regime) and an agreed commensurate fixed payment (either a fixed total sum as in Adelaide or a \$ per vkm). How a suitable T-O negotiation process may be introduced *ex ante* in a CT context is unclear¹².

5. A way of ensuring that T, O roles are defined through the outcome of a broad based *systems planning and design* approach involving area agreements/quality partnerships is needed. Under the STO system, there is a tendency to focus on contracting at the operational level. However there is much opportunity and perhaps high appeal in improving the tactical tasks (especially the interface between the T, O levels) through PBCs. Examples might include: (i) putting the transport network design and implementation out to CT, especially where the interfaces between infrastructure and operations are critical to network integration; (ii) collecting all fares by smartcard, where collection is undertaken by a bank on behalf of government, as proposed for Chile.
6. *Service design and development* includes determination and development of the network, patronage, capacity/load factors, etc. It is unrealistic to expect operators (especially new operators) to present a service development plan at the tendering stage, for many reasons including a lack of sufficient market knowledge and appropriate expertise¹³. Service design and development may, therefore, be more productively determined by either the regulator or consultants. An example of a service design and development initiative is to simplify the new operator transition period by introducing new operators to route-based contracts rather than area-based contracts. There are arguments in favour of service redesign at the tendering stage as well as during the contract term. In particular, the former promotes an opportunity for innovative input at a stage when it can influence the selection of the successful bidder, and in many ways provides greater clarity on what might be the best outcome in terms of cost commitment. The downside however is that some operators may promote service levels that are simply not sustainable, but which appeal to the assessment committee awarding the contract to operators who later find they cannot deliver. This is the winner's curse. Negotiating service design details with the winner tenderer establishes a stronger commitment to the outcome, since it must now

¹² An increase in patronage may not cost the operator anything, ie a bus load increasing from 40 to 45 people. It was suggested by Chris Stretch (South Africa) that the incentive should be linked to additional trips and or additional vehicles required, although such an approach clearly has drawbacks

¹³ There may be other reasons for the regulator to design the service, ie to address social needs in poor rural areas where the terrain is very hard on vehicles. If an operator designs the service, they may opt for the more lucrative routes and leave people who have no other access to transport, stranded. However the objective under a trust partnership is to work cooperatively to avoid this with a clear understanding that such an outcome will not be accepted by the regulator. Indeed such non-compliance is likely to lead to a CT outcome.

definitely be delivered, and under the assumption that the contract will not be revoked, a great deal of careful commitment is likely to evolve. The implications of this for the procurement and payment process are also important. The ex-post negotiation simplifies the evaluation of the bids, and it might also increase the number of bidders. However there is an unknown level of financial commitment ex post if the negotiations still have to be worked through, including the extent to which revisions of incentive payments may lead to budget escalation.

7. Negotiated contracts require *benchmark costs*¹⁴ to be determined from diverse sources, including data which may be available from the current group of operators and other local operators. Accumulated data from around the world may also be of use, although the considerable problems of transferability to a different operating environment need to be recognised. (Some CT processes do publish full details of tender awards: for London see http://www.tfl.gov.uk/buses/cib_tender.shtml). The uncertainty associated with a benchmark cost analysis for a given area is best represented by a cost band. The location of the contract costs within the band would then be determined through negotiation. Benchmark bands are also required under CT to avoid the risk of contrived cost statements and possible appointment of an operator whose bid costs are clearly unsustainable. An "open book" system to check costs is usually requested in negotiated contract processes, where it is less of a threat than under CT processes.
8. Existing T-O culture seeks the best value for money available within the means offered by existing government budgets. How can we grow *government budgets* where evidence points to growing value for money with growing patronage and service? In Sydney, for example, the government has no more money to allocate (or redistribute) to bus services and is looking to secure greater value for money from the existing budget allocation (with allowance only for inflation adjustments). Despite public transport being promoted as an important agenda item for the current (Labour) government, it is low priority relative to health, crime and infrastructure. Indeed the government is keen to reduce the subsidy budget to public transport, and is looking for ways to do this within a setting of a commitment to private operators (as well as the large government operator) who currently are fighting to survive financially with the contract-supported funding provided by government.¹⁵

5. Other Issues

The workshop identified some specific issues associated with contracting that require consideration in most circumstances. We provide a brief statement on each issue, some of which are also presented as a series of questions for ongoing deliberation.

An area of variable success is the commitment of the regulator to adequate *auditing and monitoring of operator performance*. This budgeted item often gets short change as the

¹⁴ In some situations such as newly evolving markets, benchmarked costs are required for CT to establish some basis for assessing the ability of the operator to deliver under their offered prices.

¹⁵ In Sydney we have strong evidence that private operators are 'cross-subsiding' the contract services that are mandated under MSL conditions for contract compliance, by charter net revenue. This evidence is supportable under generally acceptable assumptions about how shared costs are 'allocated'.

budgetary cycle evolves, resulting in a service drop-off unless there is a major complaint from passengers or politicians. A much more serious commitment to monitoring is required, especially where there are inadequate incentives to deliver services through the life of a contract. Internalising monitoring and reporting costs within a contract price has much merit. There should be a lesser need for monitoring when the payment system gives the operator incentives to provide attractive services. The costs of monitoring/auditing may be built-into baseline contract prices to ensure it happens. Such monitoring should provide a mechanism for developing key performance indicators on operating performance and service quality, giving all parties a rich data set for planning improvements in services. This approach should assist in ensuring that outcomes are checked against strategic objectives as well as contract compliance. It should also facilitate an open book approach to checking benchmark costs (which may be both more necessary and more acceptable under negotiated PBC than CT since it then implies a lower threat to the incumbent operator), and the regulator can source suitable evidence as widely as possible to establish confidence in revision of benchmark costs over time.

PBCs as presented have been used more extensively in the bus sector yet they have relevance for railways as well. A more considered assessment of rail PBCs is required to establish the portability of the bus experience to a sector that has a much greater investment in infrastructure under its responsibility (unlike roads that are treated as an investment not at risk). Klarmann (2003) illustrates the particular complexities of urban rail franchising where perhaps NC PBCs have most potential.

Flexibility in contract term can also assist in accommodating operator development. A range of options exists between contracts in Perth, Western Australia, with a life of up to 14 years including a renewal period, and the negotiated contracts in Toronto, which apply over 6 months; and the width of this range highlights the potential benefits of developing trusting T-O partnerships.

The introduction of *contract regimes* for the provision of bus services is usually premised on a prior assumption that the size of the physical contract area is given and that any policies related to interactions between contract areas such as integrated ticketing and fares require agreement. Research is required to establish a position on appropriate contract area sizes before re-contracting, and on the benefits of service quality-related issues like an integrated fares policy, that are assumed to be impacted on by the number of contract areas. Given that a growing number of analysts (especially in Europe and Australia) are promoting the appeal of increasing physical contract area size to facilitate service quality-related issues like an integrated fare regime, it is timely to set out the pros and cons for such changes to ensure they are not counter-productive to the desired outcomes of a reform process. Alternative ways of delivering cross-regional and broad-based network benefits should be considered at the same time, to assess whether the perceived gains from a reduction in the number of contract areas is real or illusory (see for example, Cmabini and Filippini (2003)). If the gains in network effectiveness and efficiency are not sufficiently large to outweigh possible losses in internal efficiency, then the case for amalgamating contract areas is weak. Where the major focus is on local service provision, opportunities to deliver appropriate cross-regional and cross-network services might best be revealed and promoted by T-O partnerships.

Regulatory capture is always raised when discussing partnerships across the STO supply chain and this is often used as an argument (maybe ‘excuse’) to throw water on the proposition that trusting partnerships can achieve a great deal in securing appropriate systemwide outcomes (in contrast to the more narrow focus on securing the least cost operator for a service that lacks innovation and network integrity benefits). At another level, the same argument is used to claim that CT leads to market concentration, although all systems incorporating T-O interaction are subjected to this claim. We need more evidence on the extent to which regulatory capture is a serious issue and the extent to which it may be the product of information asymmetry in favour of a specific operator. In particular this investigation should be conducted with the objective of establishing how to make contracting work at the T and O level. Project alliancing, sharing risk and reward, and replacing the master-servant relationship with a trusting partnership, should all be central issues. The challenge then would be to bring the regulatory component of STO to a commitment in favour of genuine partnerships that are free of corruption where may be present.

Regulatory challenges differ depending on whether there exists a well defined and stable regulatory environment or a poorly defined and unstable (corrupt) environment. Both environments make CT and negotiated PBCs problematic; although operator associations appear to have a growing role in assisting government in preparing operators for the new PBC environment, be it via CT or negotiation. This is especially important for situations where there are many small operators, many of which lack experience in dealing with formal supply mechanisms (as seen in South Africa with the empowerment of operators using 16 people capacity vehicles). The city of Recife on the north eastern coast of Brazil offers a detailed example (in Appendix B) of the challenge facing many developing economies.

6. Conclusions and Recommendations for Ongoing Inquiry

A number of very clear messages evolved from the workshop. The key ones are:

1. That any system of PBCs should be linked to an outcome-based integrated system in which all players throughout the STO framework participate as trusting partners.
2. Little research has been documented on regulatory failure. Too much focus is often placed (at least by the regulator) on the performance of the operator whereas the success or otherwise of the contractual regime is also equally dependent on the performance of the regulator.
3. The enthusiasm with which many developing economies are embracing regulation to reign in or eliminate the high level of service (even if chaotic) provided by the informal or alternative transport sector (be it legal or otherwise) should be carefully thought through in order to preserve the substantial benefits to passengers of very flexible public transport systems.

4. Moves to consolidate down to a few large operators can learn from the experiences in developed economies (eg the Melbourne and British experiences with a few very powerful multinational players who have a tendency to offer very attractive short run prices that are not sustainable in the longer run over the duration of the contract and who subsequently put pressure on the regulator to revise the financial support upwards). This is particularly a problem with rail-based contracts, where there are few players in the market. However, if negotiated contracts are thought of as a stage that follows competitive tendering, formalisation of the CT-NC sequence may be unavoidable in a developing economy setting.
5. Competitive tendering and negotiated contracts should be seen as a suite of performance-based contracts and used as instruments of change and service delivery where appropriate. We have detailed the settings in which each has special attraction.
6. Importantly CT-linked and non-CT linked PBCs have strong complementary roles in a dynamic service delivery setting where (i) some markets are still evolving and maturing (incl the regulatory framework) such as in South Africa, (ii) some have evolved and are inefficient and even corrupt at both the T and O levels such as in Brazil, (iii) some have been successful under a CT treatment (others have not), (iv) some seem ready for a progression from an initial CT setting to an NC setting and (v) some seem ready for an immediate NC treatment without a prior CT stage.
7. The encouragement of cooperatives to coordinate the activities of individual operators in the alternative transport sectors (as in Brazil and South Africa) has to be treated carefully. We need to avoid the risk that such cooperatives are managed in a way that increases the debt to operators through improved access to finance and that the beneficiaries are not passengers but the managers (ie 'regulators') of the cooperatives. We must recognise and preserve the benefits of the informal van sector – lean and light on institutions, cost efficient, high service quality, strong customer focus and more flexible to match demand and supply.
8. Comparative assessment of the various contract models, especially empirical evidence needs to be better documented, especially determination of the dynamics of contract type mixtures.
9. In developing guidelines for PBCs in practice, a greater focus should be placed on (i) the definition of MSLs, (ii) establishing detailed measures for benchmarking best practice (in terms of Cost, Patronage and Capacity delivery), (iii) determining critical KPIs (for operating performance and service quality indicators, (iv) setting up a scheme for monitoring/auditing and maybe internalising this cost in contract price, and (v) establishing appropriate incremental patronage payment rates based on the lesser of economic benefit/shadow price and the minimum cost of providing service to accommodate additional patronage.

10. PBCs must be assessed in the context of social equity objectives that are backed by KPIs (esp. for gross cost contracts) of operator performance (eg on-time running) and user-based service quality indicators (eg cleanliness of vehicles, friendliness and helpfulness of driver).

Appendix A

Note: The Chilean and Recife case studies were not discussed in the workshop but are included because they exemplify a number of issues debated in the workshop.

The Chilean Proposal¹⁶

Santiago Chile is currently finalizing a new integrated public transport plan in which competitive tendering of operations of buses is central to the plan. The existing 8000 buses provided by 4000 operators (mainly independent owner drivers of a single vehicle with some larger operators) will be replaced in 2005 (after a June 2004 competitive tendering process) with 10 operators providing feeder services and 5 operators providing structural or corridor services¹⁷. The latter will be a mix of articulated and bi-articulated buses on mixed traffic and dedicated infrastructure as appropriate, in 5 areas each with on average 10 corridors routes, with a total of 51 corridors throughout the system. The new approach has been described by SECTRA (Secutaria Ejecutiva Comision de Transporte), the planning agency, as revolutionary. The planning of the entire system of public transport is 'based on conceptual, scientific and theoretical application' using an investment of over \$1m dollars to develop a comprehensive modelling system. Contract length is still under discussion but 10 to 14 years is the current view for corridor contracts and 3 to 10 years for feeder route contracts. However limited thought has been given as to whether this is appropriate or whether a negotiated PBC may be the way ahead after the first round of CT has bedded down a set of 15 experienced quality operators¹⁸.

Feeder Services

The plan is to tender the feeder services using a system Sectra describes as a patronage incentive scheme. Operator's may be required to bid on at least 5 area contracts to be eligible to win one or more contracts. The bid price will be a total price related to a price per passenger¹⁹ for a predefined service design and level. This price will be received by an operator and the fare will be collected by a tendered money operator (most likely a bank). The fare will vary by the type of trip (ie only feeder, only corridor,

¹⁶ The synthesis of the Santiago plan (known as Trans Santiago) was obtained after the conference from discussions in Santiago with SECTRA staff on 24th September in Santiago. I thank Henry Malbran, Executive Secretary of Sectra, Alan Torres, Technical Coordinator and his staff as well as the regulators from Trans Santiago for briefing me and providing comments on PBCs at a seminar. The comments by Juan Carlos Munoz, Enrique Fernandez, and Juan de Dios Ortuzar of the Pontifica Universidad de Chile are greatly appreciated.

¹⁷ Part of the reason why the buses are not currently being updated is because the government will no longer guarantee a role for incumbent operators. Indeed it appears that there is a desire to use the tendering process to remove such operators and replace them by a few large operators, preferably from offshore.

¹⁸ Indeed the idea of a move to a negotiated PBC with revised benchmarked costings and competition for an above-minimum patronage level budget proposed by the author generated a lot of interest.

¹⁹ It is not decided how school children will be handled. In Chile school children less than or equal 14 from non-private schools (ie 75% of schools) travel for free. Children from non private schools 15-18 years of age are given a school card (distributed by the Ministry of Education) and this entitles them to pay a third of the normal fare in buses. They can also apply to this benefit for Metro trips if they can prove that they live in the vicinity of a Metro station (in this case they are sold two tickets per day maximum).

and a combination) and is determined by the regulatory agency Transantiago based on current fares (about 300 pesos or \$US0.45) and nature of patronage to be serviced. Thus the fare is a given for the operator. Importantly the planning agency has a good idea of patronage levels (based on existing operating experience) and uses this to establish how much money will be raised by the actual fare charged in each feeder area. This money will have to pay for the operator contracts in feeder areas and maybe also to support corridor services if some funds are available. If the fare is greater than the price/passenger received by an operator then the 'surplus' revenue will be available to cross-subsidise operators who receive a price per passenger payment which is greater than the fare²⁰. Sectra have assumed that the method of cross-subsidy between contracts will approximately balance out so that there is no additional subsidy to operators. They recognize that this may not occur and have allowed for some subsidy support under a contingency fund. The actual patronage is determined in advance of the tender and is crucial to the operator's calculation of the bid price. The bidder's will have full access to the patronage and forecasting models developed by Sectra.²¹

Corridor Services

For the corridor routes, a service payment (in \$/vkm) is proposed in which an operator offers to deliver the predefined service for a cost per vkm entitling the lowest cost bidder the right to operate with cost per service km support from government. The structural route operator also does not get any of the fare. Under the service contract the regulatory agency proposes that vkm can vary within a range plus or minus 20% so that the operator has some incentive to grow patronage via growing service kilometres up to 20% of the approved level, but importantly this remains the decision matter for the Authority. Although operator may be permitted to drop as low as 20% of agreed vkm's without any penalty of non-compliance (in recognition of what may be reality from time to time when the economy deteriorates etc.), this is a decision made only by the regulator. The cost per kilometer is assessed against knowledge of the range in which best practice is likely to occur, which is currently heavily influenced by the performance of incumbent large operators.

Finally the regulatory agency (or bus controller who will also be tendered), will have responsibility for monitoring the performance of corridor operators, although this is only a proposal at this stage²². Central to this responsibility is a customer satisfaction survey. All corridor operators will be surveyed and ranked in respect of customer satisfaction. Operators will be eligible for a bonus (although it is not clear how this is determined – we were advised that the methodology has now been established but not the actual dollar amounts or the threshold criteria). Operators underperforming (however measured) will receive financial penalties which will be used to reward operators who have performed well with a financial bonus.

The system is interesting but further clarification is required. It appears that we have a tendered PBC regime in which an MSL is imposed from the integrated metropolitan plan (developed by Sectra), which is not linked to an agreed CSO payment (as in the H-H model) but which is then tendered under two regimes: (i) the feeder services which

²⁰ They are hoping this will not occur as it might encourage some operators to invent fictitious trips in order to generate a benefit.

²¹ Importantly all bidders and Sectra share the patronage risk and so it could be argued that if there is a shortfall of patronage below forecast levels then Sectra should agree on some funding arrangement with operators.

²² It is assumed that the patronage incentive payment (while a fixed rate) paid to feeder route operators on increased patronage is sufficient incentive to keep up service levels and so not satisfaction survey is required.

involve the offer of a price per passenger (but all fares are collected by a tendered money collector using smart cards) and (ii) the structural services which involve an offer to win the right to operate the MSL for a cost per service kilometre with all fares being returned to the money collector. A financial bonus or penalty derived from a customer satisfaction survey (also known in Australia as a performance assessment regime) is linked to the corridor services only. Corridor operators can benefit from patronage growth in feeder markets which is encouraged by the patronage incentive payment since many of these bus users will move onto the corridor services.

Appendix B

The Informal or Alternative Transport Sector: Relevant or Redundant?

The city of Recife on the Northeastern coast of Brazil has population of 1.4 million. A mix of public transport operators and systems co-exist: railways, buses and vans (the latter are called the “alternative transit system”). 46% of the trips are made by public transport (38% by buses, 2% by railways, 4% by the “alternative” system, 2% by contracted transport); and 31% use motorized individual transport (27% for private car, 4% for taxi and hired cars); pedestrians come for 23%. The bus system plays a major role in the urban journeys, with services provided by 20 private operators with 2376 vehicles. The average age of the fleet is 4 years; per day, the fleet runs 22,325 trips and 645,266 km and carries 1.2m passengers. This system has been increasingly been challenged by informal (“alternative”) operators which use smaller vehicles to operate a chaotic network, uncontrolled by the authorities (Prefeitura da Cidade do Recife & Companhia de Trânsito e Transporte Urbano, 2001).

A recent inquiry in 2000 s revealed the presence of 3,683 vehicles, which are active within an area that corresponds to 60% of the whole Region. Beyond these figures, the total sum of irregular vehicles is supposed to amount to 6,000 vehicles for the whole Region. Alone the counted vehicles would carry around 163,000 passengers per day (thus more than the railway system, which is responsible for 120,000 passengers per day); extending these results to the remaining not scrutinized area (40%) suggests 272,000 passengers being carried by the informal system, which corresponds to approximately 19.4 % of the total demand served by the official bus system controlled by the EMTU/Recife (*ibid.*). This illegal competition and the competition by individual transport as well the economic crisis have provoked a reduction of the patronage in the official transit system. Whereas in 1990 the average number of passengers carried by a bus in a day was around 1000, in 2001, this same figure has dropped to 514, what means a reduction of 50%. This reduction has led to an accumulated deficit of the official bus system (EMTU controlled system) which amounts today millions of reais (ca. 40 millions US\$). This is a key ingredient in government interest in using competitive tendering to ‘tidy up’ the market of suppliers.

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